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The AMERICAN HOROLOGIST

IN THE INTEREST OF THE HOROLOGICAL AND JEWELRY INDUSTRY

TECHNOLOGY DEPT.

Vol. IV DECEMBER, 1939 No. 12

The American Horologist

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THE AMERICAN HOROLOGIST

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CHICAGO NEW YORK DALLAS ATLANTA BOSTON

Season's Greetings

THE AMERICAN HOROLOGIST, its staff, The United Horological Association of America, Inc, and its officer personnel extend to the entire trade, our supporters and members, the best of wishes for an active December and a most prosperous year in 1940.

We are greatly indebted to our thousands of friends, advertisers and readers, who have encouraged and helped make this work possible. Through your cooperation we point with pride to the largest organization in the industry, devoted to the upliftment of our jewelry industry.

You are individually responsible for this phenomenal growth which is verified through the fact that in America there are 131 organized horological groups, and of this number 121 groups compose the National Association . . . working, thinking, and acting as one unit.

Your judgment in supporting the National is truly justifiable and we promise you over twenty additional groups in 1940, which will further swell the followers of this great cause who will further support and hail those who continue to assist and make their work possible.

Again we extend the Season's Greetings and our best wishes to each and everyone interested in the upliftment and advancement of our general industry.

May we all enjoy a broader understanding, a closer unity . . . with more vigorous determination to elevate and enhance our industry.

In the spirit of unity and progress.

The Editor,
THE AMERICAN HOROLOGIST.

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Diamond Turning

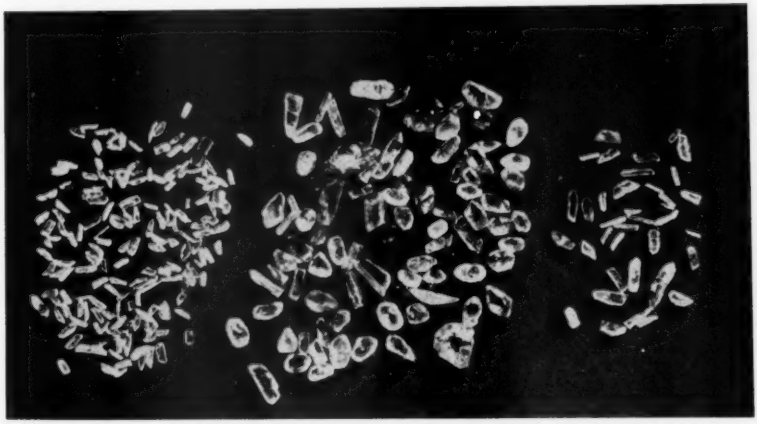
COVER PAGE

By BAUSCH & LOMB OPTICAL COMPANY

DIAMOND turning might possibly mean some operation in the polishing of gem variety of carbon. But to the instrument maker, diamond turning indicates a role for the aristocrat of jewels wherein it serves a more prosaic purpose than personal adornment. And to the instrument user, it is an operation that contributes greatly not only to appearance, but also service and satisfaction in use.

The common practice, in the working of brass and bronze, is to use the conventional lathe tools for the heavier cuts. This is followed by the use of a planishing tool, very fine corundum and crocus cloth, with a final polishing by buffing. This produces a surface that, to the average unaided eye, is entirely satisfactory. It serves as a base for subsequent lacquering, nickel and chrome plating and, for ordinary service, is considered adequate. Naturally, however, it is impossible to maintain very close limits as to size because the final polishing operation is uncontrolled.

By the use of diamond tools, however, the shortcomings in holding to close tolerances is avoided and other advantages conferred. Here, instead of following the heavier roughing cuts with the use of abrasive and polishing materials, a diamond tool is used to bring the work to final size and finish. The tool consists of an actual diamond, ground and lapped to shape, brazed into a rigid holder. The nature of the work and character of the material determine the shape of the cutting point. The work is rotated at relatively high speed. The depth of the cut is controlled very accurately, so that it is possible to duplicate pieces precisely. But this is not the only advantage. The diamond tool not only makes a very fine finishing cut, but it also burnishes the metal, resulting in a very highly polished and uniform surface. It leaves no scratches; nor is there introduced a film of any foreign material, such as finely divided corundum or rouge, to fill the minute pores. This is especially important where plating is to follow. When a diamond turned surface is subsequently plated, there is no chance for these particles to act as an under coat and thereby prevent an intimate and adherent metal coating. Thus, it prevents blistering and peeling. This means that a diamond turned plated



Slightly More Than $10,000.00 Worth of Turning and Marking Diamonds. 4/5 Natural Size.

surface will stand up longer under the wear and tear of laboratory use.

Because diamond turning is so well adapted to precision instrument manufacture, it is widely used in the making of Bausch & Lomb instruments, such as microscope objectives, eyepieces, photographic lenses, binocular parts, projection lenses, ophthalmic and diagnostic equipment. Bausch & Lomb pioneered in the application of diamond turning in instrument production. It has been used here for many years. It is only natural, however, that during this period experience has been acquired that has led to improvements in the process and more diverse application. In the early days, diamond turning was valued largely for the sake of the fine finish. As developed here, it is used primarily for its high accuracy and hence is frequently employed for parts that, in the normal use of the instrument, are never seen by the user.

The extent to which diamond turning is utilized in the Bausch & Lomb plant is indicated by the fact that there is a special department for the manufacture of the diamond tools themselves. Here the natural crystals are given the proper shape for the special jobs, following regular gem cutting technique. Occasionally, other manufacturers, with similar problems, utilize Bausch & Lomb's experience in this line by purchasing diamond tools, but, for most purposes, the process is too costly and requires such exceptional experience that general employment is unlikely. The average diamond tool costs about $50.00. The diamond from which such a tool is made weighs approximately 1 carat each. Last year 16,000 carats of diamonds were used by Bausch & Lomb for metal turning, glass milling, cutting, and drilling. To avoid the possible accusation of being unfairly competitive with Dan Cupid, it should be said that the diamonds used are not suitable for gem purposes.

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Horologists

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Manufacturers

An E-Z to Build Watch Cleaner

By JACOB L. HAGELOW, JR.

THE watch cleaning machine is definitely a great step forward in the art of cleaning watches quickly and thoroughly. The use of this machine does still, however, necessitate the complete taking apart of the watch movement, the removing of all cap jewels, and also the pegging out of all pivot holes; a thorough job cannot be accomplished otherwise.

The old method used in cleaning watches by stringing the parts on a fine wire and then running them through the different cleaning solutions and drying them in sawdust was a slow process. Many watch parts, such as levers and screws, had to be dipped individually and consequently this took a lot of time. The sawdust had to be removed from the parts by means of a soft brush. In spite of extreme care exercised in this operation, occasionally some minute piece of sawdust on a pinion leaf or in a wheel tooth or in a small opening in one of the plates was overlooked; this surely, sooner or later, would cause the watch to run irregularly or stop entirely, and naturally the result would be a comeback.

A simple cleaning machine of the type picture on this page (see Figure 1) can be constructed very economically. The basket may be procured at any material house and the attachment (see Figure 2) can be made on the regular jeweler's lathe. In constructing this attachment first cut out of flat brass stock, 1½ millimeters thick, two discs of the same diameter as the cover on the basket. One disc to have three sections, 3 millimeters wide, and projecting 2 millimeters beyond its diameter. These sections are to clamp underneath the three hooks on the basket. It is desirable to cut away as much of these discs as possible in order to allow the solution to flow through the basket from the top. The disc containing the three sections that project out from its diameter is now attached to the end of a piece of brassing tubing. (The tubing should be ¼-inch in diameter and 7 inches long.) This can be accomplished by cutting a square shoulder, slightly longer than the thickness of the disc, on one end of the tubing. A hole is then drilled in this disc, the diameter of which will allow same to fit over tubing up to the square shoulder. The tubing protruding through the disc is then burnished over, holding the disc firmly in place.

The other disc is fastened to a piece of brass rod in the same manner. This rod is to fit freely in the brass tubing and

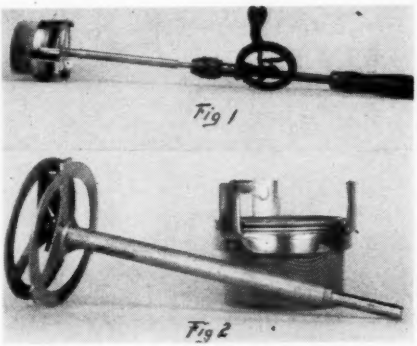

Fig 1

Fig 2

to be 4 inches in length. A spring must now be made to fit over the brass rod between the two discs (see Figure 2). This is to give tension to the upper disc and to hold the attachment firmly in place when attached to the basket. In order that the discs may be held together when not attached to the basket, a slot is cut into the tubing approximately three-fourths of an inch long and a hole drilled in the rod. This hole to be slightly smaller in diameter than is the width of the slot so that the rivet which is now to be driven into this rod will slide freely in the slot of the tubing.

A small hand drill can be used to spin this basket (see Figure 1). Your cleaning machine is now complete and ready for action!

Forty-Seven Years Ago

FORTY-SEVEN and one-half years ago a horologist society was established in Chicago. The American Horological Society headed by Theo. Gribi as their first president. The aims and objects were almost identical to those of U. H. A. A. We note they admitted members from the United States and Canada. They truly aspired to the formulation of a national association.

Other national attempts are on record, but these failed. Forty-two years after Theo. Gribi and his followers attempted to bring about horological unity and fraternity, nine men . . . total strangers . . . assembled in Washington, D. C., and laid the foundation for the present great National Association; and from the following accounts it can be seen the similarity of ideas, ideals and objectives incorporated.

What were dreams of our forefathers is today a reality! Undisputedly, the horologists are firmly established in one great national fraternity composed of 121 individual active groups acting as one body.

We quote in part from *The American Jeweler,* Chicago, 1892:

"The advisability of organizing a Watchmakers' Association has been discussed at considerable length by the watchmakers of Chicago and has finally resulted in a permanent organization, which bids fair to become a very important one as it grows older. The field is certainly ample, for aside from the Swedish Watchmakers' Society of this city (which by the way is a new organization and has hardly got down to work as yet), the watchmakers of America are unrepresented. Something like 10,000 men, women and boys are employed in our watch and clock factories, while upwards of 15,000 watchmakers are employed at the bench, making a grand total of 25,000 souls, and yet, with the exception of the above mentioned society, this great army of skilled mechanics has not a single organization for the advancement of the horologist.

"The watchmakers of Chicago were the first to wake up to the condition of affairs. They realized that in England, France, Germany, Italy, Switzerland and many other countries of the Old World there are associations devoted to the interests of watchmakers, many of which associations are old and respected, and have done much towards the education and betterment of the trade. No better example can be cited than the Clockmakers' Company of London. It was established in 1632, and has had within its membership such men as Graham, Tompion, Earnshaw, Harrison and Mudge. This society is still active and is a credit to the trade which it represents.

"The watchmakers of Chicago realize that the coming World's Columbian Exposition will doubtless bring to our city many celebrated horologists, possibly such men as Juergenson, Saunier, Schveder, Lange and others, and they ask 'Who will entertain such visitors?' In Europe they have always met with the most courteous treatment from the various horological societies. Shall we allow them to return home and say that they were amazed at our enterprise and the wonders which we exhibited in watch and clock making, but that socially we were boors? They would not be able to comprehend that it was not a lack of respect but was simply owing to the lack of organization, that we did not receive them as they would be received in Europe. After fully discussing the matter the following call was mailed to the watchmakers of the city:

> "'Whereas, We, the undersigned, believe that all watch and clockmakers will be benefitted by mutual and friendly intercourse at stated times, and by listening to, and participating in, carefully prepared arguments and discussions on the various subjects connected with horology; and
>
> "'Whereas, The coming World's Columbian Exposition will bring to our city the most eminent horologists of the world,
>
> "'Therefore, We call upon all the watch and clockmakers in Chicago to attend a meeting to be held in the Rotunda Club Room of the Sherman House, Clark and Randolph Streets, Thursday evening, June 9, 1892, at 8 o'clock sharp, for the purpose of forming an association which shall encourage and improve American Horology, by providing a suitable place of meeting, where its members may meet and entertain such eminent horologists as may from time to time be temporarily in our city; where essays may be read, and discussions carried

on and where competitive exhibitions may be held and diplomas of excellence awarded. The formation of a technical library and museum, for the benefit of the members is also contemplated. You are cordially invited to attend and bring with you as many of your friends in the trade as possible.'

"Eighty-five watchmakers responded to the call.

"The meeting proceeded to the election of permanent officers, the result being as follows:

"President, Theo Gribi; 1st Vice-Pres., O. C. Hanson; 2nd Vice-Pres., M. O. E. Hartung; 3rd Vice-Pres., A. M. Church; Treasurer, L. F. Hussander; Secretary, Geo. H. Hazlitt; Executive Committee, G. D. Parsons, Olof Sandberg, C. R. Hart, H. O. Johnson and J. P. Wilcox.

"Various suggestions were made in the way of a name, and it was finally declared unanimously that none was more fitting than 'The American Horological Society.'

THE FIRST PRESIDENT

"Mr. Theodore Gribi, the first president of the American Horological Society, was born near the old walled town of Moret, on Lake Neuchatel, Switzerland, January 27, 1840. He began his work as a watchmaker at the age of 16, learning

THEO. GRIBI

his trade among the establishments in the French Cantons. At the age of 18 he came to this country, and after spending

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The Thinnest American wrist watch of its size ever made for men!

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THE FIRST AMERICAN WATCHMAKER **WALTHAM**

seven years at work in the various establishments of Philadelphia, he opened business for himself at Wilmington, Del. About this time his health became seriously impaired, and after remaining one year in Wilmington he sold out, on the advice of his physician, and returned to Europe, spending a portion of the succeeding eight years in England, France, Germany and Switzerland. He had by this time become so favorably known in the latter country that he was selected by the Swiss Government to superintend the horological exhibits made by that country at the Centennial Exposition, and accordingly, 1876, found him once more in Philadelphia. In addition to this work he was selected as one of the judges on 'Instruments of Precision,' and received a medal from the United States Government 'for services rendered.' After the close of the exposition matters he accepted a position with the Elgin National Watch Company at Elgin, and remained with them for seven years during which time he made another trip through England, France and Germany, gathering information for the company. In 1885 we find him at Waltham, Mass., in the service of the American Waltham Watch Company. In 1886 he came to Chicago and engaged in business for himself as a dealer in fine watches and the repairing of complicated watches for the trade. It will thus be seen that he has had an unusually wide experience, covering the entire range of the trade, and his knowledge of the various phases of the business and his extensive acquaintance in this country and Europe should prove of great value to the society.

"Of the eighty-five who answered the call sixty-three signed the Constitution and By-Laws. They were as follows:

G. A. Turner,
H. H. Hardinge,
W. B. Lull,
W. A. Utzman,
A. M. Rockwell,
Wayne Young,
H. N. Moore,
C. S. Dustin,
W. W. Dexter,
C. W. Wilbun,
A. R. Fleming,
Aaron Harris,
O. G. Bryant,
W. H. Crump,
C. W. Crosby,
F. Stevens,
F. A. Missman,
S. J. Vasaly,
Thos. H. Wicks,
F. L. Brown,
H. C. Parsons,
C. Wolfe,
David James,
E. R. P. Shurly,
F. C. Fagercrans,
Joseph Frey,
R. Bachman,
E. Hoffmann,
J. C. Christensen,
George H. Hazlitt,
Christian Christensen,
Max O. E. Hartung,
W. D. King,
A. A. Bastar,
G. D. Parsons,
S. H. Green,
C. E. Fearing,
Milton Headman,
A. J. Reinhardt,
Chas. B. Muller,
F. S. Fresise,
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Jas. M. Whitney,
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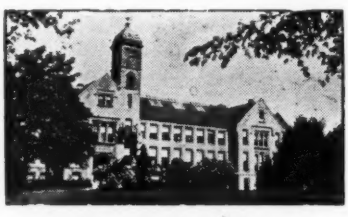
C. E. Walker,
J. R. Hughes,
Otto E. Lange,
R. R. Mather,
H. W. Lance,
W. J. Merrill,
C. H. Hanson,
W. T. Davies, Jr.,
J. L. Eggleston,
Arthur St. C. Bells,
J. S. LaSha, Jr.,
Thomas Kaster,
Millie Hocking,
L. F. Hussander,
A. M. Church,
Theo. Gribi,
Olof Sandberg.

Editor's Note: We would appreciate hearing from any of the men who signed the constitution of this society.

"The Pathway to Success"



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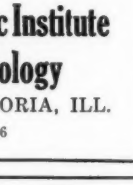
Parts for all kinds of Clocks, Wheel Cuttings, etc.



AERONAUTICAL INSTRUMENT SERVICE

Aircraft Instruments

EDITOR'S NOTE—Aeronautical Instrument Service is a subject untouched by publications in the Horological field, or in fact by any publication. In September, 1938, THE AMERICAN HOROLOGIST inaugurated such an educational service via prepared illustrated lectures to be used by U. H. A. A. organizations for the purpose of broadening our members' scope of knowledge in this field, which offered additional remuneration to those far-sighted enough to avail themselves of such knowledge.

ARTICLE No. 3

(Continued from November Issue)

Modified Form of Type C Chronometric Tachometer.—A modified form of the type C chronometric tachometer facilitates mounting, a vertical straight scale being used. (See Fig. 6.) This tachometer may be mounted side by side with other engine instruments having scales of the same form; or with the engine gauge unit. A mounting of such compactness not only takes less space on the instrument board, but allows the pilot to read the information given by the several engine instruments in less time. Where two or more tachometers are necessary, the pilot can read the left-hand instrument, note at a glance the evenness or unevenness of the line of pointers, and know instantly whether the engines are running at the same speed.

Chronometric Electric Tachometer, M1923. — An electrically-driven chronometric tachometer, also having a vertical straight scale, has been developed (see fig. 7). Its mechanism is similar to that of the type C, except that an electromagnet drawing its current from the airplane battery takes the place of the drive shaft. A contactor on the engine opens and closes an electric circuit once during each revolution of the crank shaft. This causes the magnet to draw and release an armature which acts as a pawl, turning a ratchet wheel with a speed proportional to that of the engine. This wheel operates the counting mechanism. At the end of a given interval, one or two seconds, the indication of the counter is taken by a resetting wheel, which in turn sets a holding wheel bearing the pointer. During the indicating period, the counting mechanism is thrown out of mesh.

Errors.—The errors in a chronometric tachometer are largely due to the meshing and holding of the counting wheel and pointer. Such errors in the type A and the chronometric electric may reach plus or minus 30 revolutions per minute. In the type C, they never exceed 10 revolutions per minute. As a rule, if a chronometric tachometer is functioning at all, its indications are correct within these limits. If an instrument stops indicating because of mechanical trouble, it should be replaced by a new one. Sometimes the oil in the clock mechanisms becomes thick or gummy; then the tachometer does not function at low temperature. No attempt should be made to oil the instrument when in field service. Send it to the proper repair depot, where it may be overhauled by a skilled instrument maker. A well-designed

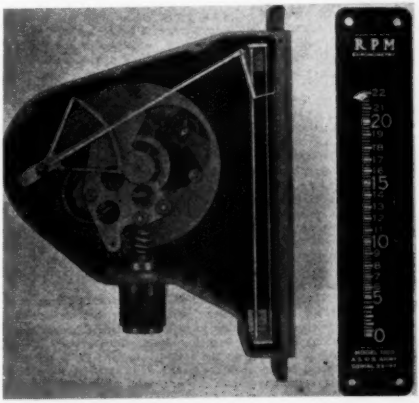


Fig. 6—Shaft-driven Vertical-scale Chronometric Tachometer.

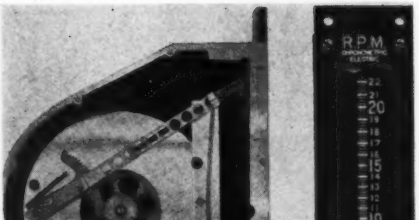


Fig. 7—Electrically-driven Vertical-scale Chronometric Tachometer.

chronometric tachometer has no errors of lost motion. Errors caused by friction and inertia are entirely eliminated and the performance is very good as regards accuracy under different conditions of temperature and altitude. It is not entirely satisfactory for indicating changes in revolutions per minute, for instead of indicating the change gradually as it occurs, it shows suddenly the total change which occurs during a given interval. Although the readings of the chronometric tachometer are always one or two seconds late, this time lag is much less than that produced by inertia in other types of tachometers.

Calibration of Tachometers.—The apparatus required for testing tachometers is shown in Figure 8. A one-quarter horsepower, variable-speed, direct-current motor is used to drive the standard tachometer and those being tested. The speed of the motor is varied by a slide-wire rheostat.

If an alternating-current motor is used, some sort of variable speed gearing, such as a friction disc or a set of cone pulleys, must be used. A heavy flywheel helps to maintain a constant speed. A Veeder liquid tachometer is used as the standard. It consists of a gear pump, which forces a colored liquid up a glass tube, and a scale which is located close to the glass tube and is marked off in revolutions per minute.

Two persons are required to make a tachometer test, one to hold the speed constant and read the standard, the other to read the instruments being tested. Readings should be taken simultaneously and repeated at least five times. Mount the tachometer on the test stand, adjust the speed of the motor to the lowest speed indicated by the tachometer and read the indications. Increase the speed by 200 revolutions per minute and again read. Proceed in this manner until the full range of the tachometer has been covered.

A hand-driven tachometer test stand (fig. 9) may be used instead of the power-driven one. The procedure is nearly the same. A calibrated type C tachometer may be used as a standard. When a revolution counter and stop watch are used as a means to calibrate an instrument, the indication of the instrument being tested must be held constant while the revolutions are being counted.

Installation of Tachometers.—The tachometer or tachometers should be grouped with the other engine instruments on the left-hand side of the instrument board. As previously stated, where vertical straight-scale instruments are used, the engine group installation is compact and, therefore, quickly read. If there is more

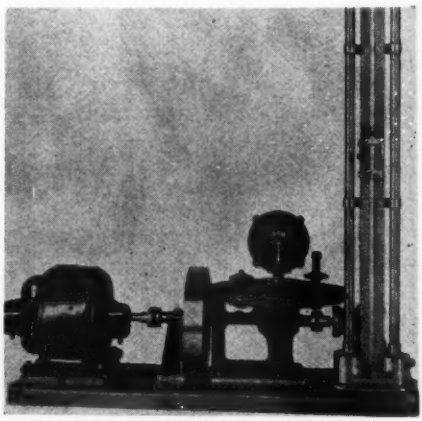


Fig. 8—Electrically-driven Tachometer Test Stand.

than one tachometer, the pointers will lie along a straight line when the engines are synchronized. Where a shaft-driven tachometer is used, the shaft should be as straight as possible, all bends, however, having a radius of curvature of at least 6 inches. The shaft should be well anchored to prevent vibration and whipping. The connection between the shaft and the instrument should be easily accessible, the tachometer then being readily removed for repair or calibration. If a round-dial tachometer is used, the dial and pointer on the tachometer may be so reset that when the zero is at the bottom of the instrument, the drive may be taken off the top, the bottom, or either side. If the chronometric-electric tachometer is used, a battery of 12 volts is necessary, and a contactor replaces the tachometer shaft at the engine. An insulated wire leads from the contactor direct to the instrument, and a second wire leads from the contactor through a suitable battery to the instrument. A switch may be so placed in the line that the current may be turned off when the engine is not in use.

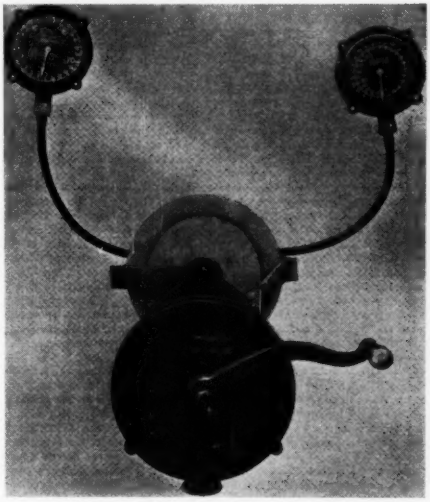


Fig. 9—Hand-driven Tachometer Test Stand.

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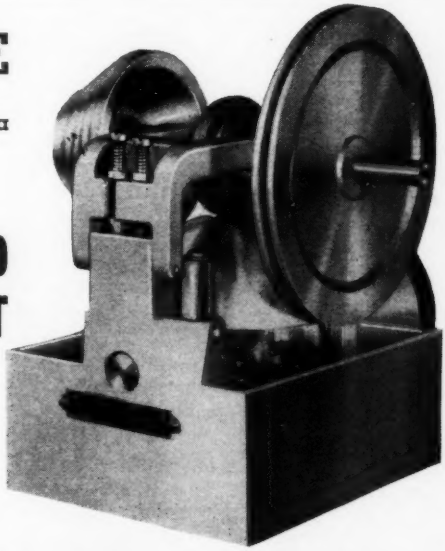


Pivot Polishing

By W. H. Samelius

ONE of the many and important factors for fine timekeeping qualities in a watch lies in the condition of the pivots. Balance and train pivots must be perfectly true, round and cylindrical, with flat ends. The shoulder for train wheel pivots should be flat and square.

There are various methods of obtaining these results, either by means of a rotary pivot polisher, Jacquet lathe or a wig wag. Very few watchmakers are equipped with either of these attachments, resorting to polishing by hand.

There are several ways of grinding and polishing pivots by hand, using various powders and metal slips. The writer will describe one method that works very well.

We must first procure proper grinding and polishing compounds. For grinding compound, we use a very fine grade of oilstone powder mixed with oil to a consistency of heavy vaseline. It is very important the powder be crushed before using as ordinarily the powder procured from jobbers is too course. The powder is easily crushed by placing a small quantity on the polishing block and crushing the powder with a knife blade.

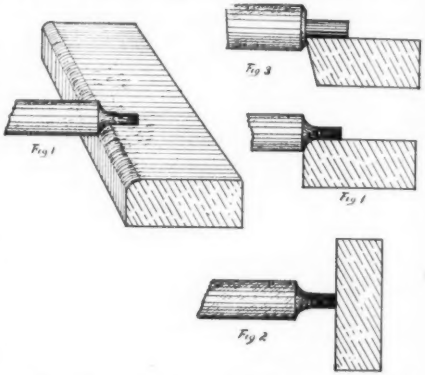
For polishing pivots, we can use diamantine mixed with clock oil. Some watchmakers prefer to mix their grinding compounds with olive oil, this being a little heavier.

After mixing the powders, we then prepare the grinding slip, which must be made from a bar of soft iron and shaped as shown in Figure 1. The surface and radius of this iron slip must be filed crosswise to the line of motion while grinding the pivot as the lining shows in Figure No. 1. A bell metal slip is prepared and shaped in the same manner.

For square-shouldered pivots the top of the slip is filed perfectly flat with the under edge relieved as in Figure 3. This leaves a sharp edge that will reach the corner of the pivot and at the same time, grind the shoulder.

Then prepare a burnish back file for burnishing the end of the balance pivots. We are now ready to go ahead with the the work.

Our first move of polishing the balance pivots will be to stone the end perfectly flat with a flat oilstone and then burnish the end to a perfect burnish and flat (Fig. 2). This operation generally throws up a small burr on the corner of the pivot.



We then take our iron slip, charge it with a small amount of oilstone powder, grinding out the tool marks, leaving the pivot a gray finish.

We wipe off the oilstone powder for the intermediate finish, grinding the pivot the second time in the same position and place on the slip as when we rough ground the pivot. The iron slip was charged from the first grinding sufficiently to give us the second grind. In other words, there

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is enough grinding powder embedded in the slip to give us the second polish.

We then take our bell metal slip with diamantine and polish the pivot until all lines or marks disappear. With a piece of perfectly clean boxwood, we can put the final gloss on the pivot with diamantine. This procedure applies to square-shouldered pivots as well as conical pivots (Fig. 3). There are many means of obtaining the fine polish required on pivots by using various grinding and polishing compounds. Some watchmakers prefer to use Crocus on the bell metal slips, others use an ivory slip charged with diamantine or Vienna lime. Then again, a tortoise shell or celluloid slip may be used for the final polish.

A small microscope is very useful on the watchmaker's bench for inspection of pivots or jewels as the ordinary eyeloupe does not always show the true condition of the pivots.

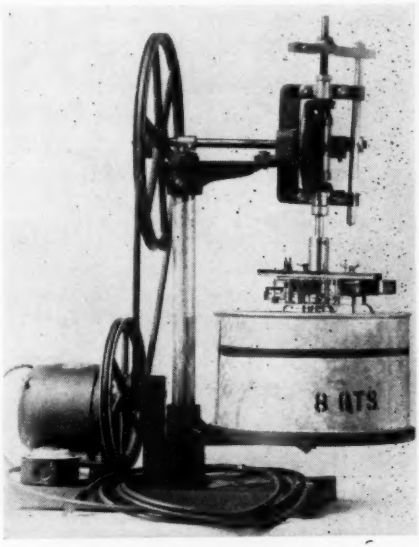
Clock Cleaning Machine

By O. E. JONES

Submitted by R. G. Taylor

The principle is, of course, that of a watch cleaning machine. Instead of a basket, he uses a bracket with clamps to secure the clock movement. This bracket cannot be raised and lowered but the pan which holds the cleaning solution sets on a table which can be raised to immerse the clock movement. The first tests proved to be unsatisfactory because the solution was set in rotating motion by the spinning of the clock movement. This fault could not be overcome by any system of baffle plates, but was finally mastered by having an arrangement which reversed the direction of rotation. The machine now spins nine times in one direction, then reverses its direction and rotates nine times in the opposite direction. The differential gears which accomplish this are those of a breast drill, fitted with an automatic trip. The trip is made to function by means of a spiral thread on the upper main shaft which raises and lowers a cam.

I have seen several clocks cleaned in this machine and marvel at its ingenuity. Mr. Jones uses the old solutions from his watch cleaning, or, lacking a sufficient quantity, he uses the oleic acid solution. He clamps the clock movement in place and switches on the motor. After about five minutes he shakes off most of the solution and rinses the movement in a high test gasoline, and then dries the movement by indirect heat.



The wheels, pinions and plates have a bright finish and the cleaning job is most satisfactory. If any of the plate holes are badly worn, Mr. Jones corrects these by the slotted bushings which fasten on the outside of the plates with a screw. He really does a good job on an American clock movement in a very short time."

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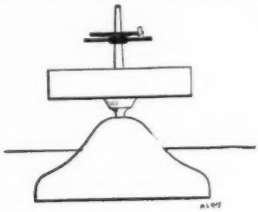
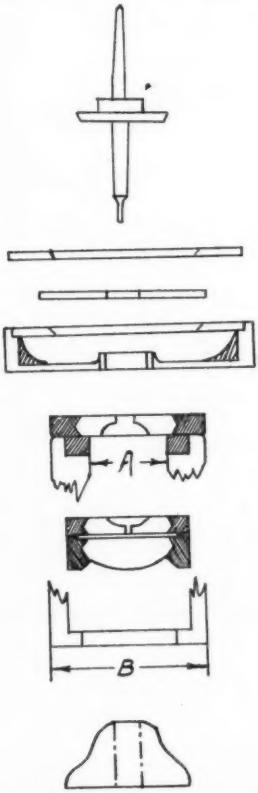
Hairspring Trueing Arbor

By M. L. KING

The accompanying illustration is an assembled view of a hairspring trueing arbor. The arbor consists of a specially



shaped staff and wheel; the staff being about 20mm in length. From the hub



down the arbor is similar to a single roller staff. The wheel is made from an 18 size mainspring barrel with teeth removed and the rim filled with soft solder to add weight. The cover is supplanted by a white porcelain seconds bit or small dial center. The upper end of the arbor protrudes above this disc for about 8mm, and is in form a tapered cone of such diameter as to receive the various sizes of collets.

The arbor is supported by three jewels, either of the burnished type or friction, set in sizing rings. Set a cap jewel and a train jewel in settings and size to the same diameter. From a piece of brass rod, $\frac{3}{16}$" diameter (welding bronze) make a tube to receive these two jewels, pressing them in at least 10mm from the end, against a retaining shoulder or securing them with screws. The 3rd jewel is a large center jewel with a hole at least 1 mm. Set this jewel in brass and size down to press into the opposite end of the tube. Mount this tube in your bench block or some other suitable place. Fit the arbor freely in the jewels but with no perceptible side play.

In use the hairspring is pressed down firmly on the upper cone, and the arbor spun in its supporting base. Observation is made from directly above, and is UNOBSTRUCTED by any trueing caliper, the white porcelain disc making an excellent background.

What Makes a Watch Crystal Sweat or Fog Up

(Editor's Note: This request sent in from Rhode Island and requested that the Technical Board make a report and publish same in this issue.)

"We have had experiences of a similar nature and find the cause to be, where a moisture-proof watch is sealed during damp weather or in a room where there is damp air, this dampness is condensed on the dial or crystal.

In sealing our moisture proof watches, they are sealed in an air-conditioned room where the air is dry. Since taking this procedure, we have had no further trouble."

By W. H. SAMELIUS.

"Body heat of the wearer raises the temperature of the inside of the case; cooler air strikes the crystal and con-

denses moisture from the warm air in the case." By FRED M. LUND.

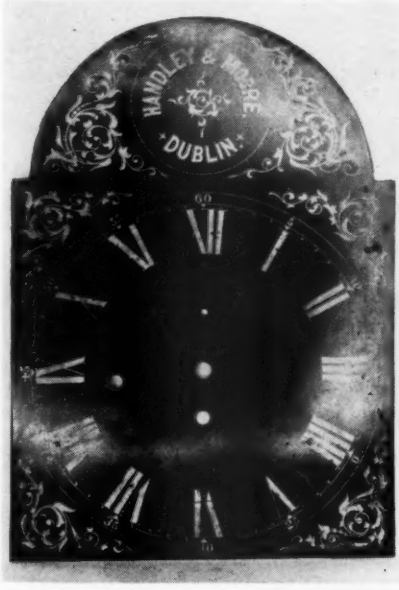
"Regarding smudge or fog on crystals of watches, would say that even if a watch is well packed and reposes in a dust-tight container, there is still the vapor of oil and this vapor is stirred up and deposited on the movement and crystal by the activity of the air caused by variation of barometric pressure. If your statement of fog is interpreted as moisture, then the very rapid change of a moist atmosphere can deposit a fog of moisture on the crystal."

By CHARLES A. BRAUN.

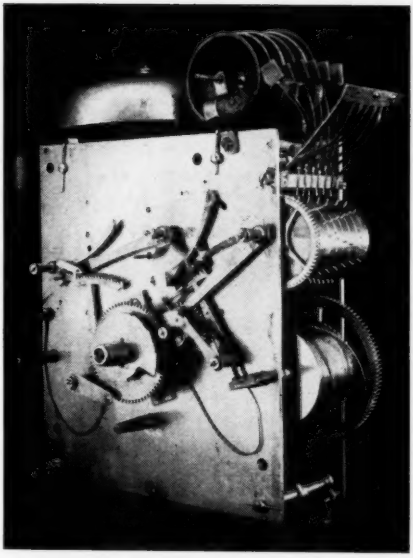
Irish Clock

By W. H. SAMELIUS

Among the various clocks that have been repaired at the Elgin Watchmakers College, the above photograph is one of a clock built by Handley & Moore, Dublin, Ireland. This clock is an heirloom and is 275 years old and no doubt is one of our earliest quarter-hour strikes.



While it has a set of six bells, there is no regular tune played on the bells. At each quarter hour, the bells are struck in sequence, first, up the scale of six notes and then down the scale again. Six bells for the first quarter, twelve bells for the half hour, eighteen bells for the three-quarter hour and twenty-four bells for the full hour.



The striking mechanism is so arranged that both lifting levers for releasing both striking mechanisms are operated by pins on the minute wheel. The pin for unlocking the hour strike is longer than any of the other pins so it engages both lifting levers at the same time. The lever for the hour strike remains on the pin about one minute longer than the quarter hour lever, allowing a one minute interval for the quarter hour bells to strike before the hour proper is struck.

The clock has a seconds-pendulum and recoil escapement.

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The American Time Products, Inc., being greatly interested in the national horological movement noticed our appeal for suggestions and help as presented on page 31 of our November issue and immediately offered a WATCHMASTER to be given as a gift in connection with our campaign plans. The WATCHMASTER will be given in return for "a single word" and you may know that word right now. Full details are available through any affiliation secretary, national office or officers.

This gift comes through actual contest . . . not a drawing . . . and those who wish to take part should secure entry information.

It's easy! Any U. H. A. A. member or affiliated group in good standing can take part, except those in National office, employees, or members of American Time Products, Inc., and the judges.

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Special Notice to U. H. A. A. Members and Associations

With this issue we close the calendar year of 1939, which to date has been the greatest year of our organizations. The increase in membership and activity has exceeded all other years.

But as we close the year books, a new and larger set of books are opened for 1940. We know larger books shall be required because for the past three months our members have been paying their 1940 dues in advance, and the 1940 membership rolls are at this time double in number of members recorded in January of this year.

Each member should assist his local, state, and national officers by paying his dues now. Your secretaries will not be so crowded, and the efficiency will be aided and maintained.

When making dues and plaque payments, why not fill in your insurance papers and send them also? Take advantage of this savings on insurance your membership entitles you to.

Each and every member is to be congratulated on their loyal cooperation. Your continued support and expressed confidence is reflected in our industry, and plans are being put into action which will enable your guild, state, and national to better and further serve you and our industry.

When making your dues payment this or next month, why not take a part in the national and state membership drives now going on? Bring a member's application to your secretary, also.

If each member would secure just one new member in 1940, the organized Horologists, working as a combined unit, would out-number any two other associations in the industry .... let's try it!!

IN NUMBERS THERE IS STRENGTH!

We wish each and every member and reader a most joyous Christmas and a most successful and healthful New Year.

Fraternally yours,
ORVILLE R. HAGANS,
National Executive Sec.

A Lesson in Friendship

By H. E. ANDERSON

The writer was interested in a new suit of clothes and quite naturally looked to my neighbor clother for the same. He showed me a number out of which I selected one. I asked the price, and how much discount he was going to give me off the regular price. I quoted the fact that I was a neighbor merchant and a friend of his. Here is where I began to learn a lesson that has stood me well in hand for many years. Mr. Meyers turned to me and said, "I really thought that you were a friend of mine." Dumbfounded I asked if he had changed his mind. He answered to the effect that he had not definitely decided whether I didn't know what I was asking for or if I wanted to help him *out* of business. Then, he went on to explain to me that business was conducted on a basis of cost plus a legitimate profit and that the legitimate profit was his wages. He said that inasmuch as I claimed to be a friend of his I should most certainly want to see him continue in business and if I did I would be more than glad to pay him for his work in merchandising the wares he had in his store. A real friend he concluded will go miles to a man to buy his merchandise and pay him the price. The man who asks for a discount or deduction is not a 100% friend.

Needless to say I purchased the suit and if Mr. Myers only knew how valuable the lesson he taught me has been I am sure he would be pleased. Every watchmaker should learn this lesson, the man who asks you to do his job for him for a little less because he is a friend is lieing. If he was a friend he would want you to succeed and to do so you must be amply compensated for your work.

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Address to New Hampshire Retail Jewelers Association

By Col. William H. Bright

THE Retail Jeweler's Association and the United Horological Association have been and are very closely related. The objects and aims of both are very much to the same purpose, namely, "to better the jewelry business." Your Association is attacking this problem from one direction and mine from another, but in either case, both are aiming at the same target. Close cooperation of both Associations has been and is, to our mutual benefit. There is no reason, that I know of, why this cooperation should not continue.

In order to have you better understand the reason for the watchmakers choosing a different angle of attack, on our mutual target, I am going to take this opportunity to mention a few facts. First: some of you have the impression that our Association is some sort of Union. It definitely is not. A large majority of members of ours run their own shops or stores and a vast number are retail jewelers. Therefore, you see it is an impossibility for any form or semblance of Unionism to be injected into our ranks. We have been very careful to eliminate any discussion of any nature pertaining to Unionism. The main reason for our existence is as I remarked before "to better the jewelry business." Our code is based on a principle of high ethics for the watchmaker. We believe that if the watchmaker in any jewelry store or shop knows his job and conducts himself in a fine ethical manner, that his particular store will soon be known to all customers as a good place for them to do business.

Most of you know of the high standing of the jeweler, in the world of business prior to the World War. You also know that since the War the jewelry business has been slipping down and down. Why? I'll tell you why. Some very unethical and unscrupulous people have chiseled into our field, hoping to obtain large profits for very little work and effort. Most of these same people, I am sorry to say, entered by way of the watchmaker's bench, doing a great injustice to the jeweler and to a public that had the utmost confidence in the jeweler of the old days. It is a known fact that these unethical so called jewelers know practically nothing of the essential knowledge of the jewelry business. We know that the high pressure tactics used by them, on our customers, is soon discovered and that, instead of creating good will, which we hold so sacred, they create nothing but contempt. We realize all this, but do we realize the attitude of our customers toward all jewelers. Do we realize that the seed of dissatisfaction, having once been sown by the unethical scoundrel, is reflected on the honest, hard working, ethical jeweler, who is doing his best, to give his trade "value received."

That is the angle that our Association is trying to combat. By educating our members in the ethical standards of workmanship and fair dealing, we hope, eventually, to eliminate the unethical practises of the watchmaking branch of the business and perhaps from the entire industry.

Another great object of my association is the registration of all watchmakers under their respective state laws. This, in my opinion, would be the greatest boon to the jewelry store that was ever attempted. By setting up a State Board of Examiners for the licensing of watchmakers, under a strict examination, the retail jeweler would need not worry about the cut price chiseler, or the unqualified person of no ethics, entering the business. Some states have already passed such a law. Many more are expected to follow suit, at the next session of the legislative bodies. I am sorry to say that New Hampshire now is one of the very few states not represented in our association, and who have not so far attempted state registration.

Your state is one of eight in the United States not participating in the great movement of watchmakers. I was quite sur-

prised to learn this and would welcome an opportunity to discuss it with a group of your watchmakers. In Massachusetts, we have five very fine and active guilds. Our state association is made up of representatives from each guild. We have accomplished much and expect to continue our battle, until we have obtained the victory that will benefit not only ourselves but our Mutual Allies as well, the Retail Jewelers.

To the Horologist

By HAROLD SABRO

To Horologists who have the time and delight in the making of new parts and complete mechanisms an entire lathe outfit, etc., is necessary. To the practical watchmaker who has to turn out a reasonable quantity of watch repairs in order to earn his living, simplicity in tools is still the keynote.

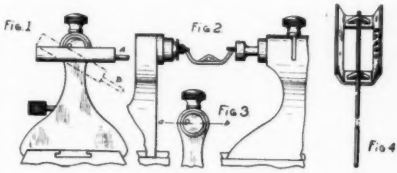
We find in our daily practice so many pivots which need to be gone over. The old Wig Wag made up to date cannot be beat in doing such work quickly and correctly. With it one can do a good job of refinishing a pivot. It takes no time to set it up in the lathe, and with only a stroke or two on the hone the wig wag is immediately ready for use. With the friction jewels now available it is a saving of material to smooth a pivot down and rejewel to get a perfect fit.

I have proven my point to some excellent mechanics. I worked along-side a young Swiss watchmaker, who was a good workman, and he had made his own rotary pivot polisher. He did not want to use any other till one day when he had a bad pivot to work on he then asked for the use of my Wig Wag. After he got through with that job he immediately ordered one.

The Wig Wag is made of bronze and with it one must have the guide which fits into the tailstock of the lathe. The pin in this guide must be placed in the position back of the center of the lathe and rest on an imaginary horizontal line through the center as shown in No. 3a-b.

The tool is held in a horizontal position for working the smallest of pivots as shown in No. 1. (A) The dotted lines show the position for the working of medium pivots. (B) For the working on large pivots it is necessary to turn the guide so that the pin will be raised a trifle up from the imaginary line mentioned.

Put a small amount of compound on and place the Wig Wag in the position as shown in No. 2. Do not crowd the tool between the shoulder of a pinion and the guide face. Leave a space about ¾ the length of the pivot.



Move the Wig Wag back and forth with a little upward pressure while the lathe is running about 200 r.p.m. and find the intermediate position the tool should be held in to have the pivot rest its full length on the operating face. If the handle is held too high, the end of the pivot only touches. If the handle is held too loosely, the base of the pivot only will touch. When held in the correct position the entire pivot will touch, and during the operation it will leave a ribbon on the face of the tool as wide as the pivot is long. With a little practice one can learn the finish pivots as perfect as the manufacturer of the finest of watches.

The smallest of pivots can be polished without danger of breaking. Look at No. 2. Any pressure upward through the handle will be equally divided at the points of contact. If one is working on a No. 8 pivot it will stand about as much pressure as a No. 16 pivot that is being worked on with a slip.

Often a double roller will not quite go on a new balance staff. By using a Wig Wag it can be fitted snug and there will be no breakage nor splitting.

Patronize Our Advertisers

Watchmaker Half Century

Ernst Wetteroth of Kansas City Mo., born in St. Joseph Missouri, April 3, 1876, started his apprenticeship under the guidance of his father August Wetteroth at the age of 13 years, and after a 5 year apprenticeship course, entered the Deutsche Uhrmacher School, Glashutte Saxony Germany, under a two year finishing course and during this period built 3 escapement models, a ship chronometer and a chronometer pocket watch, all of which are his recognition as a Master crafstman.

Ernst Wetteroth

Springfield Watchmakers Guild

Held their regular meeting, November 6th, with a dinner at the Hearme Hotel at 6:30 p. m. After a short business meeting slides of the Lever Escapement were shown, at which time much friendly discussion took place.

On November 20th, the guild held their Thanksgiving meeting with a turkey dinner. After the dinner meeting the subject of Over-oiling the Hairspring was taken up, accompanied by slides.

The next regular meeting will be held on January 15, 1940, declaring a recess for the month of December.

GEORGE F. WISDEN,
Publicity Chairman.

Demagnetizing

By PAUL LINCKE

Here is a method of demagnetizing balances with hairsprings made of some of the new alloys which do not yield to the ordinary method of demagnetizing. These light or straw colored hairsprings seem to be more resistant to magnetism but they also hold it more tenaciously once they acquire it.

In these cases it is sometimes necessary to take the hairspring off the balance and demagnetize each separately. A good way of testing the balance is by splitting the end of a piece of pegwood and slipping this over the end of the staff or safety roller and then revolving slowly between the fingers over a small compass.

In order to demagnetize the hairspring completely it is necessary to place it between two small pieces of pithwood to prevent the coils of the hairspring from vibrating. This is important otherwise the magnetism may not be removed. Cut two slices of pithwood of diameter greater than the hairspring to be demagnetized and about an eighth of an inch thick and press a small hole in the center of each to accommodate the collet and another hole in one end for the stud. Then place the hairspring top down on one disk with the collet in the central hole and the stud in the other and place the other disk on top taking care that the hole is over the projecting part of the collet to avoid distorting the hairspring. Then hold between the fingers or brass tweezers and put through the demagnetizer in the usual way.

To test use a small and sensitive compass and do not hold the hairspring in steel tweezers but use brass or hold hairspring with the point of a piece of pegwood pressed into the collet and revolve around or over the compass.

Patronize Our Advertisers

MID-CONTINENT JEWELER

"BEST FOR THE WEST"

Made especially for Jewelers and Watchmakers of the Central and Southwest Territory, which we have served for 36 years

Subscription $1.00 Per Year

MID-CONTINENT JEWELER
541 Dierks Building **Kansas City, Mo.**

DO YOU KNOW?

Directed by
W. H. SAMELIUS, Chairman
Science of Horology and Technical Advisory Board

Aeronautical Instruments

(In Cooperation With Mr. L. D. Bean, Foreman Instrument Dept., United Air Lines, Cheyenne, Wyoming.)

Airspeed—An instrument which measures the speed of an airplane with relation to the medium it travels in the air.

Outside Air Temperature Gauge—An instrument measuring the variation in temperature of the air outside the airplane. Is useful in gathering meteorological data and indicates icing conditions.

Altimeter—An instrument measuring the height above sea level by means of barometric pressure.

Climb Indicator—An instrument measuring the vertical speed of an airplane, gives an indication of level flight.

Clock—(Sweep Second) measures intervals of time, used in computation of fuel consumption and in timed turns.

Compass—An instrument indicating direction of flight, the only direction seeking instrument on an airplane.

De-Icer Pressure Gauge—An instrument indicating operating pressures of De-Icer boot, located on wings and tail surfaces.

Fuel Level Gauge—An instrument indicating the amount of fuel in the fuel tanks. Tells the pilot how long or how far the flight may be.

Fuel Pressure Gauge—An instrument indicating the pressure the fuel is being delivered to the engines.

Manifold Pressure—An instrument indicating the pressure in the manifold of the engine. This serves as a measure of the performance of the engine.

Oil Pressure Gauge—An instrument indicating the pressures being maintained in the engine's force feed lubricating system.

Oil Temperature Gauge—Instrument indicating temperature of oil, which is circulated through oil cooling radiators to increase engine efficiency.

Oxygen Pressure Gauge—An instrument indicating pressure on oxygen lines for use of passengers and crew at high altitudes.

Tachometer Indicator — An instrument indicating revolutions per minute of the engine.

Thermocouple Indicator—An instrument that measures the temperature in the engine cylinder heads by means of a thermocouple.

Terrain Clearance Indicator—An instrument that measures the clearance over the ground the airplane is flying.

Sperry Automatic Pilot—An instrument which indicates altitude about the vertical, lateral and longitudinal axis and controls the airplane about these axes, also maintains the airplane at a predetermined barometric pressure level.

Turn Indicator—An instrument indicating the rate of turn. When used with a sweep second clock, a given number of degrees turn may be executed without reference to landmarks.

Steam Pressure Gauge — An instrument indicating the amount of steam pressure on the airplane's heating system.

The Position of the Watchmaker in the Event of a National Emergency

(A Paper Prepared by R. E. Gould, H. I. A., and Read Before the New York Horological Society on November 7, 1939)

UPON receiving your letter asking me to write a paper on the Government positions open to watchmakers in the event of a national emergency, I consulted with Mr. Paul Moore, executive secretary of the H. I. of A. since its beginning in 1921. Together we have visited several Government officials who are in touch with the needs of their departments as they apply to watchmakers and to instrument makers.

As you probably know, the H. I. of A. was founded in 1921 under the auspices of the National Research Council because of the difficulty experienced during the World War in finding workmen skillful enough to care for the watches and other fine instruments required by the Government at that time.

The watchmaker, being accustomed to fine work, would be much more adaptable for work on fine instruments than an ordinary mechanic. To find these men and to promote the interest of the watchmaker in improving himself on both theory and workmanship, the Institute set up two examinations by which watchmakers could prove their ability. Certificates of proficiency were issued to men who successfully passed these examinations. The certificates, when displayed on the wall of a watchmaker's shop, serve to notify the public that here is a workman who has proved himself capable of doing good repair work.

The Junior Watchmaker Certificate is intended primarily for the young watchmaker who has not had sufficient experience to do the more complicated work but who has had training either in or out of a horological school and has the mechanical ability and skill adequate for ordinary watch repairing.

The Certified Watchmaker's Certificate is intended for the more experienced men who have been at the bench for some years, who have a good knowledge of theory, and who are capable of taking charge of a repair shop and of doing the more complicated repair work.

Upon presenting these facts to officials of the War and Navy Departments we found that there is a need for men in both of these departments to care for the fine instruments, but that it is difficult to get the right men for the work.

Many of the instruments used in aviation require skilled workmanship of the type which must be done in watch repair work. Upon consulting with the Civil Service Commission, we found that there is no register of men of the watchmaker's grade. There are registers of mechanics and of instrument makers for the repair and upkeep of laboratory instruments, but the work required is of a different character from that of the watchmaker. The Commission is willing to set up a register for trained watchmakers, if required and requested by the departments using such men. Until such requests are received, the commission cannot set up the register.

We also found that there has recently been established a new board known as the Army Industrial College, with offices in the Munitions Building, Washington, D. C., with Lt. Colonel F. A. Miles, Jr., as chairman. The work of this board appears to be to line up information regarding industry and the possible source of supply of workmen in case of an emergency. We did not contact this board as it has been so recently established that it is not yet in perfect working order. However, this does seem to be another possibility for introducing the skilled watchmaker into Government work.

While no definite promises were received as a result of our calls, we do feel that by presenting the subject to the officials contacted we aroused them to the fact that there is available a list of skilled workmen in horological lines, who could easily be adapted to other precision instru-

ment work and who could be called upon for emergency work if needed.

Another line of possible employment for men with watchmakers' training is in the commercial aviation field to maintain and improve aircraft instruments. This would be private industry but, doubtless, the experience in obtaining suitable men is similar to that in the Government service.

I wish I could give you more definite information but, perhaps, may be able to do so at some future time. The thing now is to make the Government and private industry aware of the existence of skilled workmen who might be useful in many lines of precision instrument work.

Editor's Note: Systematical classification of all watchmakers on National rolls is under way, setting forth years of experience, age, dependants, etc., and such information made available to Aeronautical and Civil Service Departments of the Government by previous arrangements.

The Horological Society of New York, Inc.

Held its November meeting November 7, 1939, before a large assemblage of members and guests. The sale of tickets to the annual dinner banquet to be held February 11, 1940, at the St. Moritz in New York City got under way with many members making early reservations. Mr. Andrew Park, president, announced that the amount and quality of door prizes to be given at this affair will exceed those given away last year.

ANDREW PARK, President

Mr. Rochas Solamon spoke on the benefits to those members of the society who would apply for certification from the Horological Institute of America. In this respect he also announced that another certified member of the society, Mr. Paul Hoffman had offered the use of his bench, tools and equipment to those willing to apply for certification.

Henry B. Fried, corresponding secretary, read a paper received from Washington, D. C., which was prepared for the society titled "The Position of the Watchmaker in the Event of War." The possibilities of employment of watchmakers in instrument factories, munition plants and airplane instrument factories where the "Watchmaker, being accustomed to fine work, would be more adaptable for work on fine instruments than an ordinary mechanic." In connection with this, the importance of the well rounded watchmaker and the necessity to read blueprints and mechanical drawings and interpret them into finished machined parts was also shown.

The talk aroused considerable discussion. Mr. Park announced that December's meeting promised just as eventful an evening as the one just concluded.

Address all communications to Henry B. Fried, corresponding secretary, 1372 Ocean Parkway, Brooklyn, New York.

New York Student Guild No. 1

A trip made through the Hamilton Watch Factory, October 16, 1939, was planned and arranged by Mr. H. L. Beehler, educational director at the Hamilton factory.

The purpose of this tour was to acquaint the students with factory conditions and methods of constructing American watches.

In addition to this tour of the Hamilton factory, the students of Morrisville also had the pleasure of visiting the Bowman Technical School.

A curious incident happened to Guildsman Harry Campbell a short time ago. While returning to Morrisville from his home one night, police pulled his car to the side of the road, since all Model A Fords were being stopped in search for someone. The coppers could not seem to reason that his car could have a Utica license, yet he was attending school in Morrisville. They were satisfied with his identity when his U. H. A. A. card was shown. Perhaps this is a hint to other

guild members to keep their membership cards handy.

Instructor George J. Schlehr attended the executive meeting of the New York State Watchmakers Association at Utica, N. Y., on November 5th.

Thoughts are now turning toward more guild members. Quarterly exams have been completed and all eligible Freshmen students are eligible to become members. This will just about double the membership.

Also this month, Mr. R. G. Taylor, of the Oneida Watch Company, Utica, N. Y., gave a very informative talk to the students in trade information class on material dealers and sources. The students are not only benefited by acquiring this knowledge of materials, but by this better understanding material dealers will be supplied with the proper information when parts are ordered.

ORVILLE MESLER, *Sec.*

Minnesota Master Watchmakers Association

Second annual meeting of the Minnesota Master Watchmakers Association was held on Sunday, November 5th, at St. Paul in the Ryan Hotel.

Meeting was called to order by Clem Hitlig, of Redwood Falls, president, at 2:30 P. M. with an attendance of 85 watchmakers.

The newly elected officers for 1940 are: President, W. W. Luce of Duluth; Vice-president, J. L. Sorensen of Minneapolis; Treasurer, Carl Berger of Tracy; and Secretary, C. W. Gaskell of St. Paul.

Plans for intensification of activities were laid so that the legislative program may be successful. A tremendous state membership drive is being planned and will be inaugurated this month. Minnesota intends to top the list in organization activity.

KARL G. NEID, *Retiring State Sec.*

Akron Horological Guild

Held their regular October meeting in the Y. W. C. A. building, with eighteen members and two visitors present. One application for membership was received from Mr. R. B. Edwards.

After regular order of business Mr. Samuel Coup gave a blackboard talk on pivoting and pivoting a staff or an arbor in a workmanlike manner.

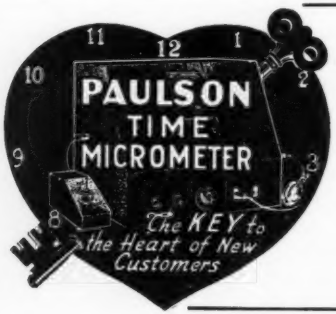
Mr. John Lentsch gave an interesting talk on his experience as repairman for war plane automatic cameras during the World War.

L. S. MOSER, *Corresponding Sec.*

Columbus Guild Auxiliary

At recent meeting, November 6th, the auxiliary joined the guild to enjoy lecture by Mr. Ferguson on his experiences in Ireland and recent return.

After lecture the ladies retired for election of 1940 officers with the following results: President, Mrs. Lee Luce, Vice-president, Mrs. Lee Gresbaugh; and secretary-treasurer, Mrs. Ed Ebersold.



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The Paulson Time Micrometer, now in its fifth year of successful performance in thousands of retail jewelry stores, not only quickly locates the trouble in the watch, speeds up your repairs at least 25% but of greater importance, it creates more business for you, builds prestige and dependability as hundreds of laudatory letters will testify. **You take no chances, satisfaction guaranteed.**

HENRY PAULSON & CO.

EXCLUSIVE DISTRIBUTOR CHICAGO

Mrs. Leslie Heimberger, retiring president, is to be congratulated on her work for the past year. Every planned party was such a success.

Plans for Christmas party, December 17th, were made and promises to exceed last year's event.

MRS. L. S. ALLEN, *Sec.*

49th Meeting of the Columbus Watchmakers Guild

The Columbus Watchmakers Guild held their regular monthly meeting Monday, November 6, 1939 at the Fort Hayes Hotel. The meeting was called to order at 8:30 P. M. by Mr. J. W. Finley, president, with twelve active, four associate members, and several guests in attendance.

The Ladies Auxiliary was invited to meet with the guild during a talk given by John W. Ferguson, district manager of the Pure Oil Company. Mr. Ferguson told of his experiences in Europe at the outbreak of war and gave a very vivid and exciting word picture of his trip back across the ocean after war was declared. Mr. Ferguson's speech proved to be one of the most interesting the guild members have had the pleasure of hearing during the past year.

The annual election of officers for the coming year was held with the following being elected: J. S. Connor, president; T. J. France, vice-president; William Orton, secretary-treasurer; and Mr. J. W. Finley and C. O. Snow, trustees. The new officers will be installed at the annual banquet to be held early in February. It was also voted to change the meeting place from the Fort Hayes to the Neil House for the coming year.

Refreshments were served after the business session was adjourned.

T. J. FRANCE, *Sec.*

Watchmakers' Association of New Jersey, Inc.

New Jersey, during the past couple of months, has moved forward rapidly with

HERE'S A WAY TO DO BETTER WORK, MORE OF IT, AND FEEL BETTER WHEN YOU'RE THROUGH...

If you are a watchmaker, you spend most of your working hours peering through a loupe. For you to work well, your eye must give you a clear picture of the work before you. But more than that, the speed and quality of your work depend on the clearness of your brain. And if you suffer eyestrain you can't have clear sight and an alert mind.

There's one way to insure visual efficiency and all that goes with it. Equip with a finely made precision loupe. Try one of the superb Bausch & Lomb achromatic glasses, that give a flat field, sharp image without eye fatigue. You can order through your own jobber. Or write for complete catalog of B&L loupes and magnifiers.

BAUSCH & LOMB 320 BAUSCH ST. ROCHESTER, N. Y.

the creation of two guilds: Union County Guild No. 1, with the following officers: Jas. Hoffmier, president, of Plainfield; George T. Wittke, vice-president, of Roselle; C. E. Cashmore, acting secretary, Roselle; and Floyd W. Huggins, trustee, of Rahway.

Essex County Guild No. 2 with the following officers: Harry Van Laar, president, Newark; Andrews J. Stroheim, vice-president, Union; Rudolph E. Neher, secretary-treasurer, Newark; Christian Mair, trustee, Irvington.

New guilds are being formed in Trenton, Paterson, and New Brunswick.

Jewelers to Meet in Kansas City April 4th

A midyear regional convention of the American National Retail Jewelers Association will be held in Kansas City April 4 and 5, with approximately 500 retail jewelers from five states in attendance.

Delegates are expected to attend from Missouri, Kansas, Nebraska, and North and South Dakota, with Fred W. Sands in charge of local arrangements.

A New Guild for Kansas

On November 9th the fifth guild was organized by the Kansas State organization. The state officers met at Medicine Lodge, with sixteen present at the meeting.

The guild is composed of men from Pratt, Kingman, Anthony, Harper, Coldwater, and Greensburg, and the meeting of this guild will rotate between these towns.

Cosley Jewelry Company

Wholesale Dealers of
Jewelry, Tools and Jewelers' Supplies, Findings, etc.

301-302-303 University Building

Denver, Colorado

Officers elected were: Louis C. Irion of Kingman, president; R. C. Nease of Pratt, vice-president; and C. L. Payne Anthony, secretary-treasurer.

The name of the guild will be decided at their next regular meeting December 5th, and meetings will be held on the second Tuesdays of each month.

Connecticut Horological Assn.

State meeting called by President Joseph Dahl, November 18th in Waterbury.

JOSEPH DAHL, State President

Special attention was given to revision of State By-laws, which will be printed and made available to all members.

Considerable discussion on licensing bill and decision to again present same in revised form.

The state shall again convene in January.

T. W. BURT, *Sec.*

Norwich-New London Guild

Held election at regular meeting in November at the home of Max Toelg.

Officers elected for 1940: President, Mr. Potter of Mystic; Vice-President, C. A. Jaquith of New London; Secretary, T. W. Burt of Willimantic; Treasurer, Max B. Toelg of New London.

In January a social will be held, at which time installation of the new officers will take place.

The state officers will be invited to participate.

Next meeting will be in the office of Jack Russ, New London.

Worcester and Worcester County Guild No. 2

The Worcester Horological Guild No. 2 enjoyed one of their finest meetings Monday night, November 6th, when they heard Mr. Robert G. Hoppe of the research department of the Elgin National Watch Company. Hr. Hoppe brought some of the new equipment recently installed at

Elgin and demonstrated its use. In addition, Mr. Hoppe delivered an excellent address on the "Advances Made in Modern Watchmaking." Mr. Hoppe's presentation was very interesting and highly educational.

Mr. Potter, son of the president of the Elgin Company, and Mr. William Selberg, sales division manager, were also introduced.

President Clifford Barton presided.

In Memoriam

We, of the industry, have lost another benevolent member of our craft, Mr. J. Freistadter, Supt. of Waltham Watch Co., and member of U. H. A. A. technical board, who passed away October 12th due to heart trouble and other complications.

In the loss of Messrs. Donnelly, Tinkler, and now Mr. Freistadter, the horological fraternities have been hard hit within a very short period.

Maurice the Jeweler, Hartford, Conn.

Takes advantage of a loss as the following ad will indicate which appeared in the morning paper.

NOTICE

To the person or persons who broke our store window at 2:15 a. m. this morning and appropriated some of our Fine watches and other jewelry—

We are pleased that you appreciate good watches and jewelry and hope that if you are not entirely satisfied you will return these articles. (Note — Longines watches carry a life time guarantee and we will be glad to give this life-time service.)

Store Hours
8:30 A. M. to 7:30 P. M.
MAURICE THE JEWELER

Introducing Jewel-Re-Clean

Until recently, the cleaning of jewelry has been a slow and very much involved process entailing pans, boiling, solutions, rinses, etc. This has all been eliminated now, and reduced to having a handy jar of JEWEL-RE-CLEAN nearby.

JEWEL-RE-CLEAN, a product manufactured by the C. & E. Marshall Company, is a quick acting solution for cleaning jewelry, that has met with immediate approval by the trade. Cleaning with JEWEL-RE-CLEAN can be done right at the counter and is a big time and money saver. All there is for the jeweler to do is to immerse and rotate the article to be cleaned in the jar of solution for a few seconds, wipe dry with a clean cloth, and it is once more sparkingly clean. No sawdust or rinsing is required. The same solution can be used repeatedly. It is also excellent for cleaning optical goods. It contains no abrasives and is not injurious to hands.

JEWEL-RE-CLEAN is attractively packaged and put up on handsome display cards for re-sale at the counter.

INGERSOLL "TREE OF GIFTS"

For real holiday atmosphere and selling effectiveness in your show window or inside your store, ask Ingersoll-Waterbury Co., Waterbury, Conn., to send their new "Tree of Gifts"—A Christmas Tree cut-out in brilliant colors, standing 18½ inches high and displaying all the principal watches of the Ingersoll line.

Free—while they last—to merchants who handle these models.

Rear Admiral Richard E. Byrd Again Chooses Longines, the World's Most Honored Watch, to Time and Navigate the Third Byrd Antarctic Expedition

Again for the third time, Longines watches have been chosen by Rear Admiral Byrd to time and navigate the Third Antarctic Expedition. This Third Antarctic Expedition, however, is of special significance in view of the fact that it is officially commissioned by the U. S. Government to explore and lay claim to a large portion of the Antarctic Continent for the United States. The Byrd Antarctic Expeditions have revealed the importance of timing equipment in exploration by air, land and sea to an extent never before realized. Even Admiral Byrd's dog sleds carried Longines chronometers as a safety measure and all the aerial photography over the South Pole in other mapping flights were timed by Longines.

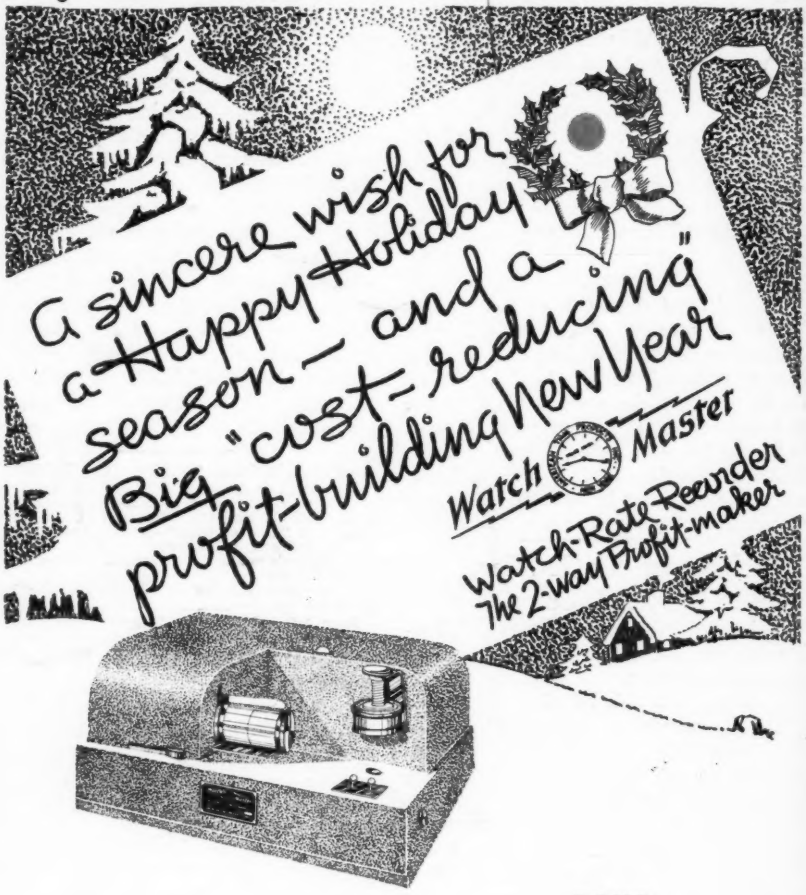
Rear Admiral Richard E. Byrd is known as one of the most careful as well as one of the most successful of aviation-explorers. He leaves nothing to chance in his scientific preparation. At the conclusion of the First Byrd Antarctic Expedition, Admiral Byrd wrote:

"After the remarkable results obtained by Longines timing equipment, I can only choose Longines for the exact timing of my Second Antarctic Expedition. For many years my Longines chronograph watch has never left my arm and is my faithful companion. I always can rely on Longine's accuracy."

That he meant precisely what he said is best proved by the fact that the Second Byrd Antarctic Expedition also carried Longines timepieces for scientific observations peculiar to polar exploration.

1940 ATLAS CATALOG RELEASED

Catalog Number 40—presenting complete information on Atlas machine tools and equipment for 1940—has just been released by Atlas Press Company, Kalamazoo, Michigan. Several new attachments and accessories are announced along with the year's design improvements in Atlas lathes, drill presses, arbor presses and shapers. Copies are free on request (address Dept. 7).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